



Parameters	Ratings	Units
Load Voltage	400	V_P
Load Current	150	mA_{rms} / mA_{DC}
On-Resistance (max)	25	Ω

Features

- Current Limiting
- 3750V_{rms} Input/Output Isolation
- Low Drive Power Requirements (TTL/CMOS Compatible)
- 100% Solid State
- Arc-Free With No Snubbing Circuits
- No EMI/RFI Generation
- Small 8-Pin DIP Package
- Machine Insertable, Wave Solderable
- Surface Mount and Tape Reel Version Available.

Applications

- Telecommunications
 - Telecom Switching
 - Tip/Ring Circuits
 - Modem Switching (Laptop, Notebook, Pocket Size)
 - Hook Switch
 - Dial Pulsing
 - Ground Start
 - Ringing Injection
- Instrumentation
 - Multiplexers
 - Data Acquisition
 - Electronic Switching
 - I/O Subsystems
- Meters (Watt-Hour, Water, Gas)
- Medical Equipment-Patient/Equipment Isolation
- Security
- Aerospace
- Industrial Controls

Description

PAA110L is a dual 400V, 150mA, 25 Ω 1-Form-A (normally open) relay. This performance leader provides high peak load voltage handling capability and improved peak load current handling. Integrated current-limiting circuitry limits current to 280mA at room temperature.

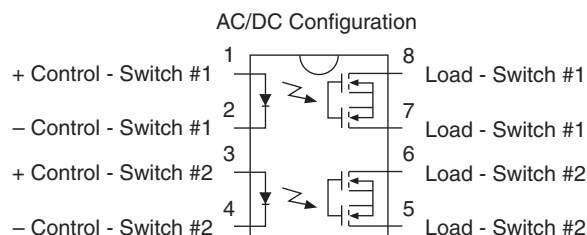
Approvals

- UL Recognized Component: File # E76270
- CSA Certified Component: File # 1175739
- EN/IEC 60950-1 Compliant

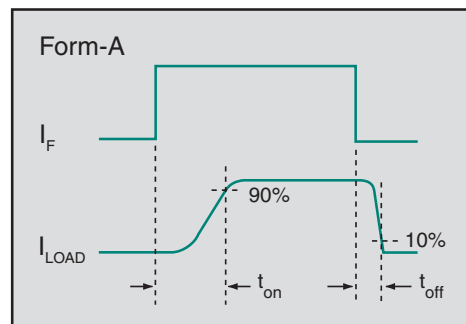
Ordering Information

Part #	Description
PAA110L	8-Pin DIP (50/Tube)
PAA110PL	8-Pin Flatpack (50/Tube)
PAA110PLTR	8-Pin Flatpack (1000/Reel)
PAA110LS	8-Pin Surface Mount (50/Tube)
PAA110LSTR	8-Pin Surface Mount (1000/Reel)

Pin Configuration



Switching Characteristics of Normally Open (Form A) Devices



Absolute Maximum Ratings @25°C

Parameter	Ratings	Units
Blocking Voltage	400	V _P
Reverse Input Voltage	5	V
Input Control Current	50	mA
Peak (10ms)	1	A
Input Power Dissipation ¹	150	mW
Total Power Dissipation ²	800	mW
Isolation Voltage Input to Output	3750	V _{rms}
Operational Temperature	-40 to +85	°C
Storage Temperature	-40 to +125	°C

¹ Derate linearly 1.33 mW / °C

² Derate linearly 6.67 mW / °C

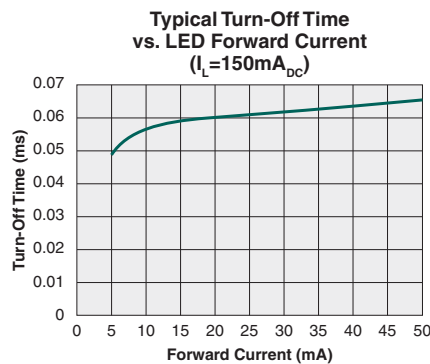
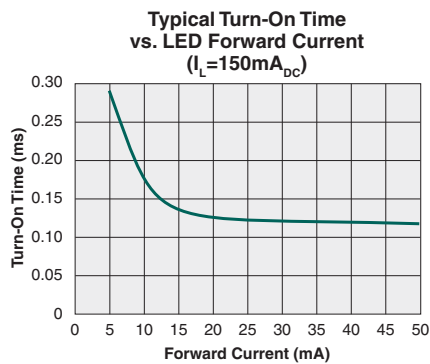
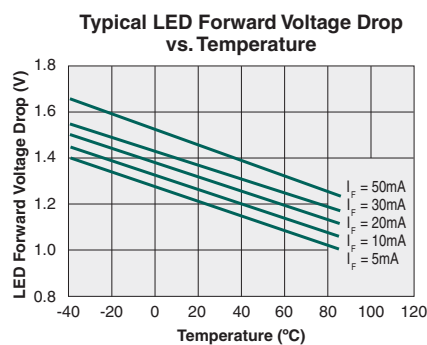
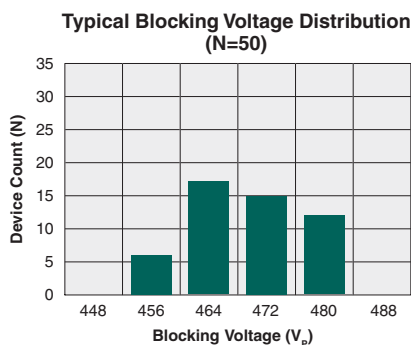
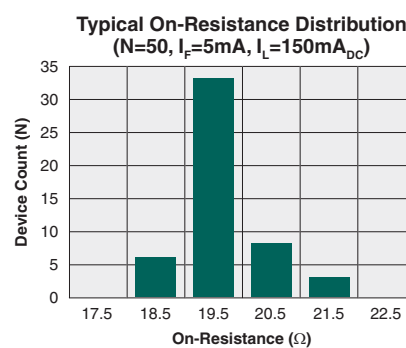
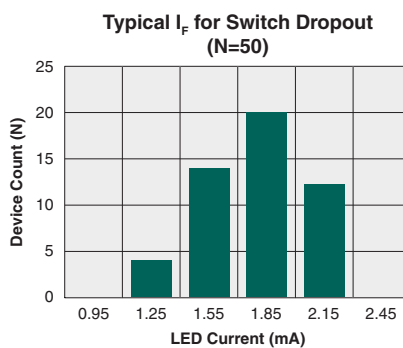
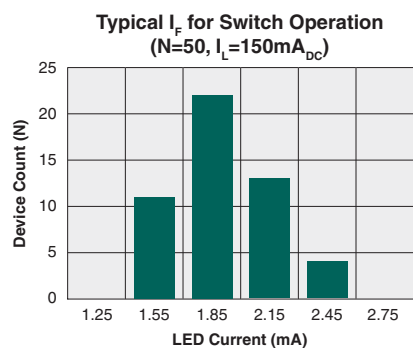
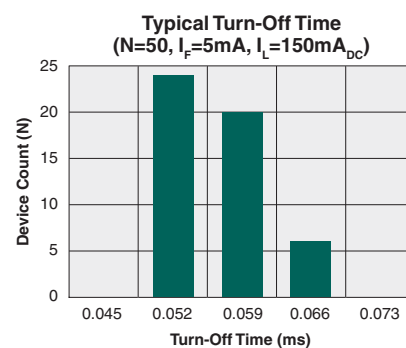
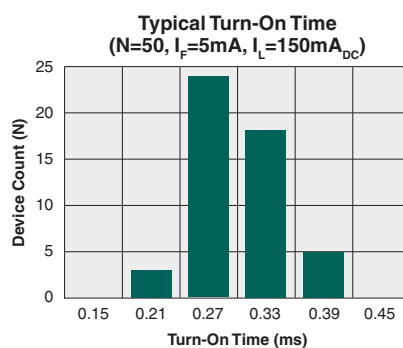
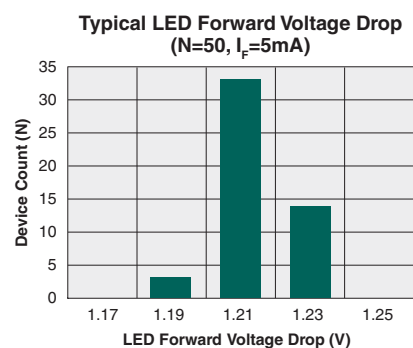
Absolute Maximum Ratings are stress ratings. Stresses in excess of these ratings can cause permanent damage to the device. Functional operation of the device at conditions beyond those indicated in the operational sections of this data sheet is not implied.

Electrical Characteristics @25°C

Parameter	Conditions	Symbol	Min	Typ	Max	Units
Output Characteristics						
Load Current, Continuous	-	I _L	-	-	150	mA _{rms} / mA _{DC}
On-Resistance	I _L =150mA	R _{ON}	-	18	25	Ω
Off-State Leakage Current	V _L =400V	I _{LEAK}	-	-	1	μA
Switching Speeds	I _F =5mA, V _L =10V	t _{on}	-	0.3	1	ms
Turn-On			-	0.058	0.5	
Turn-Off		t _{off}	-	-	-	-
Output Capacitance	50V; f=1MHz	C _{OUT}	-	25	-	pF
Load Current Limiting	-	I _{CL}	190	235	280	mA _{rms} / mA _{DC}
Capacitance Input to Output	-	-	-	3	-	pF
Input Characteristics						
Input Control Current to Activate	I _L =150mA	I _F	-	-	5	mA
Input Control Current to Deactivate	-	I _F	0.4	-	-	mA
Input Voltage Drop	I _F =5mA	V _F	0.9	1.2	1.4	V
Reverse Input Current	V _R =5V	I _R	-	-	10	μA
Common Characteristics						
Input to Output Capacitance	-	C _{IO}	-	3	-	pF

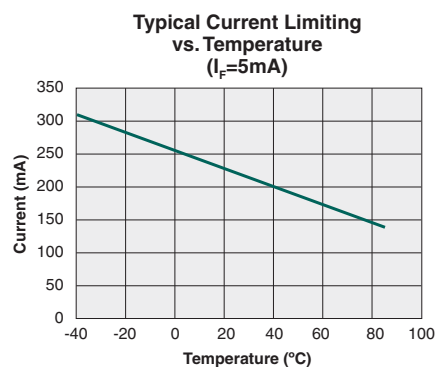
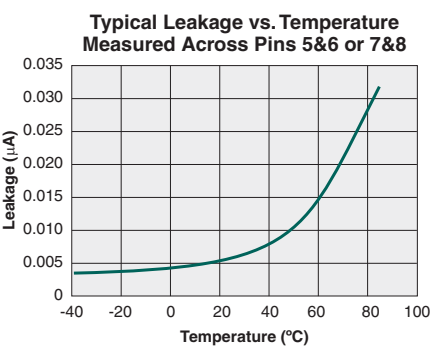
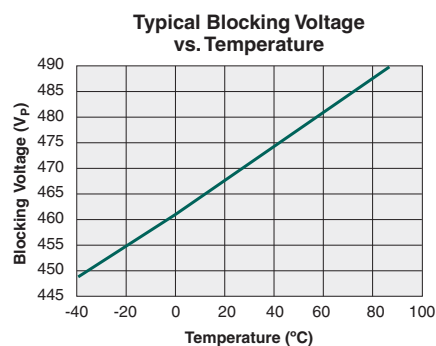
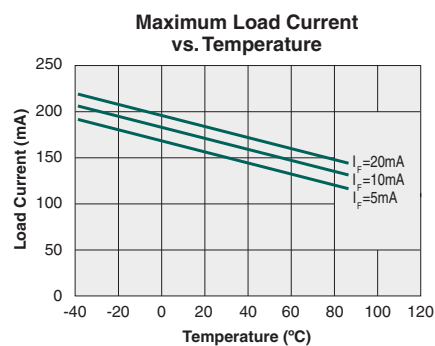
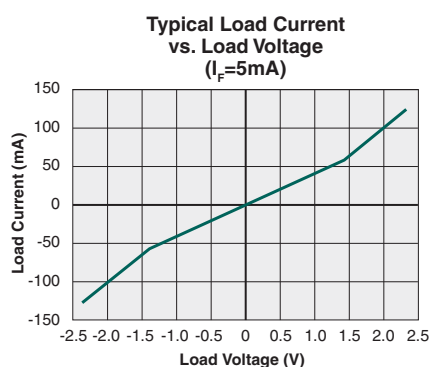
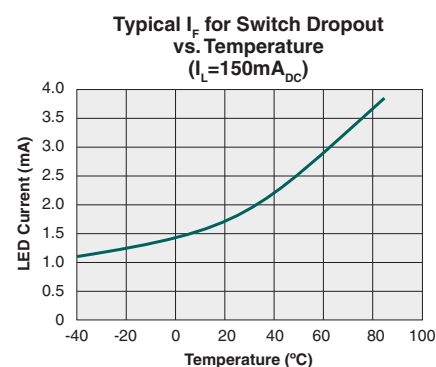
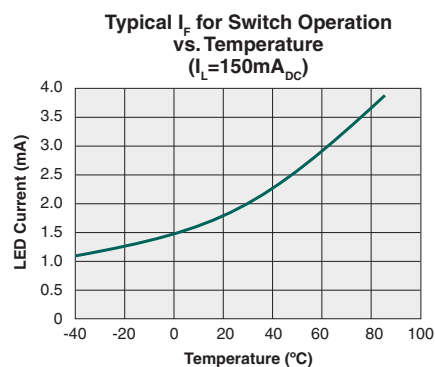
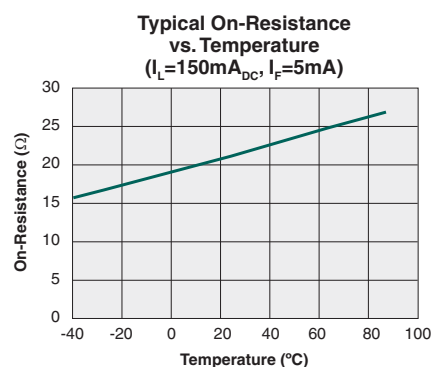
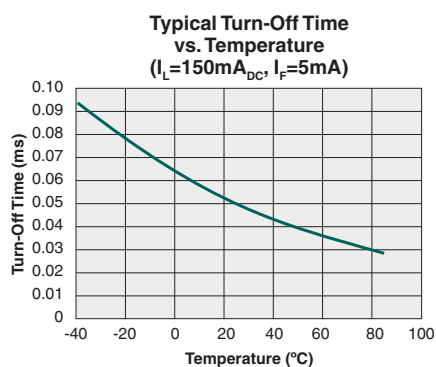
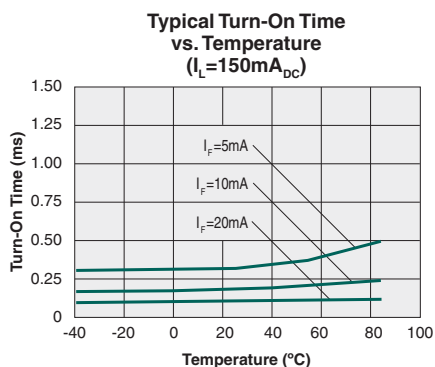
*NOTE: If both poles operate simultaneously load current must be derated in order not to exceed the package power dissipation value.

PERFORMANCE DATA @25°C (Unless Otherwise Noted)*



*The Performance data shown in the graphs above is typical of device performance. For guaranteed parameters not indicated in the written specifications, please contact our application department.

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*The Performance data shown in the graphs above is typical of device performance. For guaranteed parameters not indicated in the written specifications, please contact our application department.

Manufacturing Information

Moisture Sensitivity



All plastic encapsulated semiconductor packages are susceptible to moisture ingress. IXYS Integrated Circuits Division classified all of its plastic encapsulated devices for moisture sensitivity according to the latest version of the joint industry standard, **IPC/JEDEC J-STD-020**, in force at the time of product evaluation. We test all of our products to the maximum conditions set forth in the standard, and guarantee proper operation of our devices when handled according to the limitations and information in that standard as well as to any limitations set forth in the information or standards referenced below.

Failure to adhere to the warnings or limitations as established by the listed specifications could result in reduced product performance, reduction of operable life, and/or reduction of overall reliability.

This product carries a **Moisture Sensitivity Level (MSL) rating** as shown below, and should be handled according to the requirements of the latest version of the joint industry standard **IPC/JEDEC J-STD-033**.

Device	Moisture Sensitivity Level (MSL) Rating
PAA110L / PAA110PL / PAA110LS	MSL 1

ESD Sensitivity



This product is **ESD Sensitive**, and should be handled according to the industry standard **JESD-625**.

Reflow Profile

This product has a maximum body temperature and time rating as shown below. All other guidelines of **J-STD-020** must be observed.

Device	Maximum Temperature x Time
PAA110L / PAA110LS	250°C for 30 seconds
PAA110PL	260°C for 30 seconds

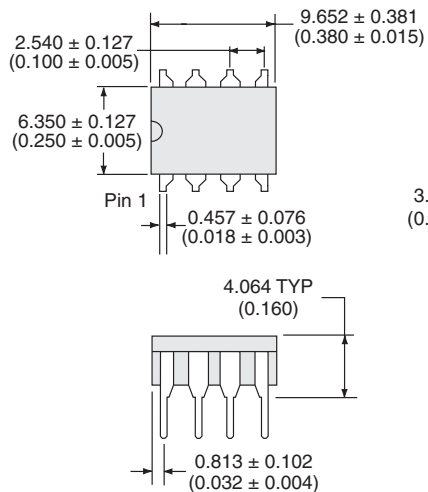
Board Wash

IXYS Integrated Circuits Division recommends the use of no-clean flux formulations. However, board washing to remove flux residue is acceptable. Since IXYS Integrated Circuits Division employs the use of silicone coating as an optical waveguide in many of its optically isolated products, the use of a short drying bake could be necessary if a wash is used after solder reflow processes. Chlorine- or Fluorine-based solvents or fluxes should not be used. Cleaning methods that employ ultrasonic energy should not be used.

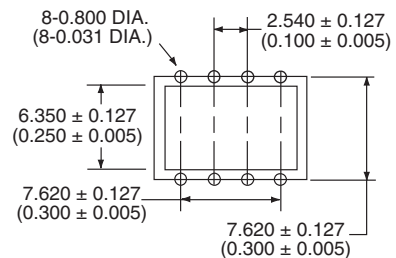


Mechanical Dimensions

PAA110L

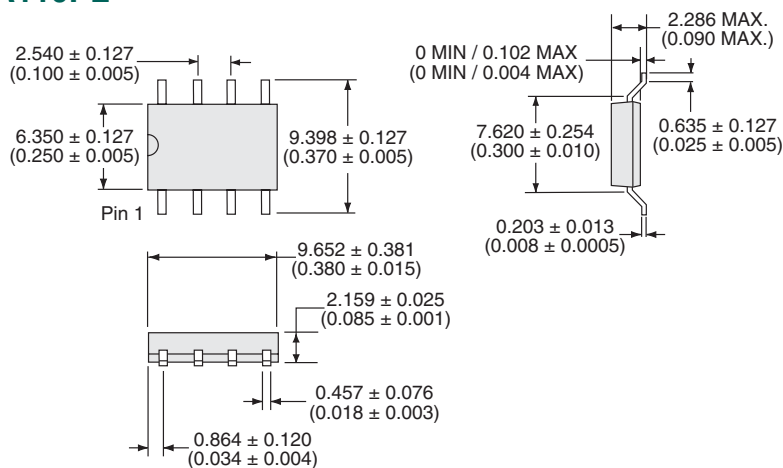


PCB Hole Pattern

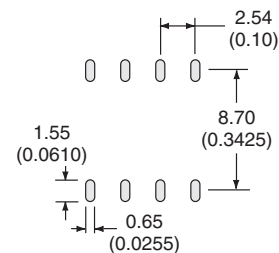


Dimensions
mm
(inches)

PAA110PL

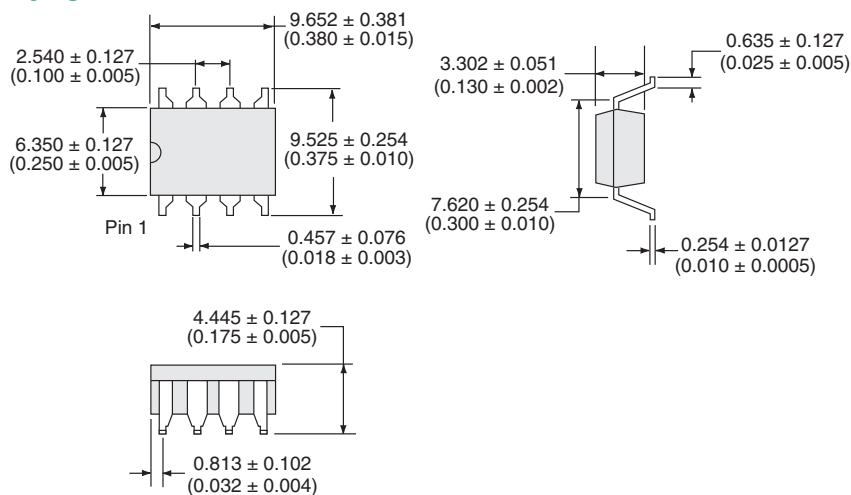


PCB Land Pattern

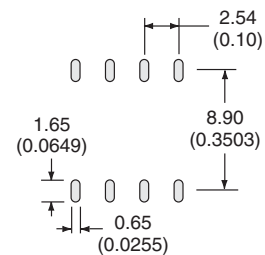


Dimensions
mm
(inches)

PAA110LS

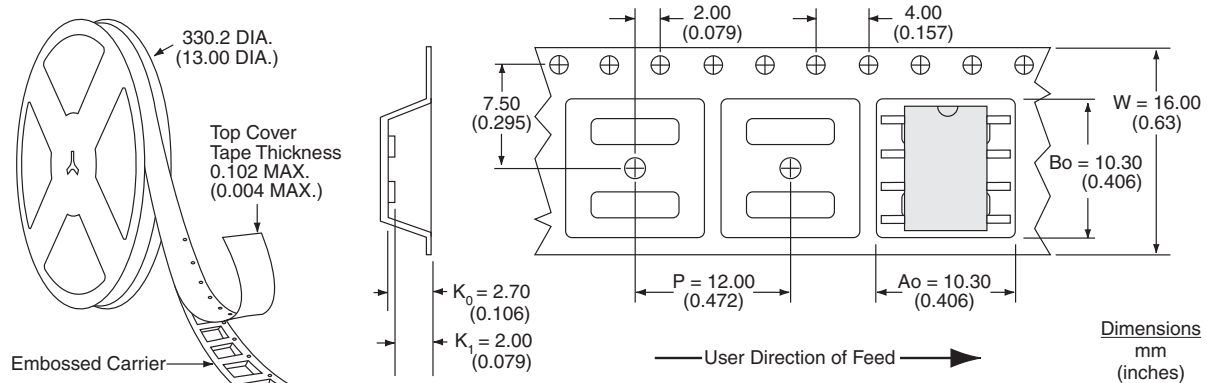


PCB Land Pattern

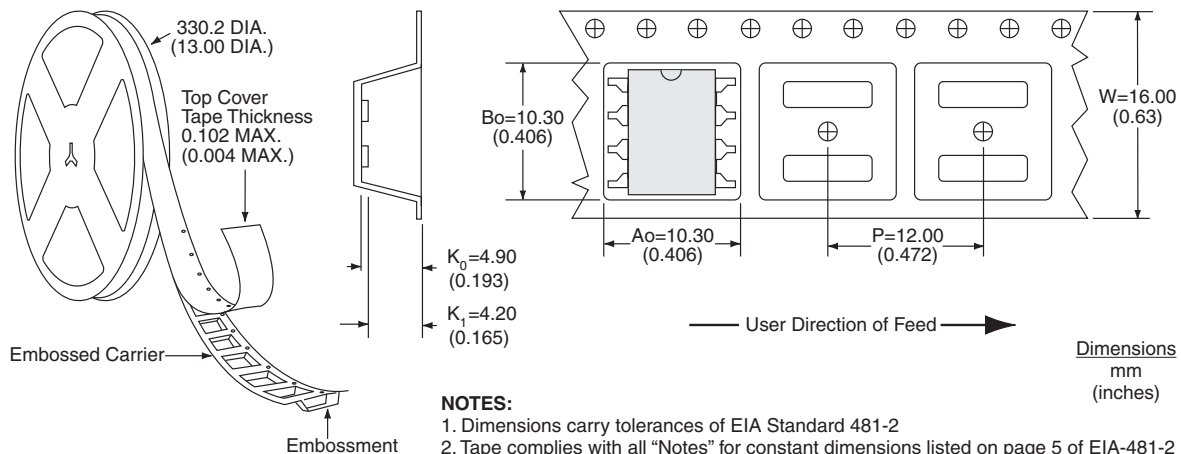


Dimensions
mm
(inches)

PAA110PLTR Tape & Reel



PAA110LSTR Tape & Reel



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